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NEPAL— Sherpa woman in gay Tibetan finery enjoys life in the Himalayan kingdom

also — CANOEING AMONG CIVIL WAR GHOSTS
SAN FRANCISCO BAY

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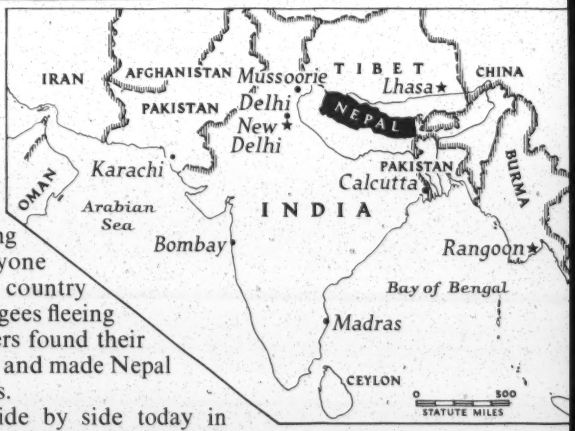

the newly crowned king, Mahendra, who, with his queen, Ratna, will pay a state visit to Washington late next month, took his first tour of his own country.

But the ice-fanged, skyscraping mountains could not keep everyone out of Nepal. Pilgrims to the country where the Buddha was born, refugees fleeing religious wars in India, and traders found their way through the mountain passes and made Nepal a melting pot of Asiatic religions.

Hindus and Buddhists live side by side today in neighborly fashion. Many shrines have become sacred to both sects. Valley Hindus share temples with their Buddhist friends on the higher slopes. Huge drums thud and bells clang almost continuously in the city of Katmandu whose name, appropriately, means "wooden temple." Some 350 temples, both Hindu and Buddhist, adorn the capital.

The nation is divided into three areas—midlands, highlands, and lowlands—and the major groups of people that make up Nepal's population of 8,500,000 can almost be determined by altimeter.

Tibeto-Burmese, probably the aboriginals, live in the midlands, between 4,500 and 8,500 feet high. Higher up are Tibetans who crossed the border and settled in the highest valleys of the Himalayas. This group includes the Sherpas, one of whom, Tenzing Norkey, accompanied Sir Edmund Hillary to the top of Mount Everest in 1953. The third group immigrated from the south and lives below the 6,500-foot altitude. Among their number are the Gurkhas—Hindus who fled the 14th-century Moslem invasion of India. They won reputations more recently as crack soldiers in the British and Indian armies.

For people who live in an unpaved nation, Nepalese spend a lot of time on the road. A quarter

NATIONAL GEOGRAPHIC PHOTOGRAPHER VOLKMAR WENTZEL

NEPAL'S RELIGIONS—Pagoda-style Hindu temples and ancient shrines line Katmandu square, left. Buddhist monk, above, begs food and money for lamasery at Bodhnath.

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PHOTOGRAPHS BY TONI HAGEN

Nepal Sheds Its Hermit Role

TURNING THEIR BACKS on the village of Chautara and leaving behind their laboriously carved terraces of rice fields, the farmers above, bent by the weight of their burdens, begin the grueling march to the market place of Katmandu.

It is not far: a mere 25 miles as the partridge flies. But for the men it means almost a week of marching barefoot over nearly impassable terrain, of gambling with death on cliffs that hang staggeringly high over thundering river currents, of walking narrow boulder-strewn paths that have never felt the touch of the wheel.

With the air age opening up the remote country, Nepalese children see their first plane before they see a bullock cart. Nepal has prayer wheels aplenty but few wheels for vehicles. Indeed, many paths are not passable even by pack animal. Log bridges, snow-clogged mountain passes, and steaming jungles are hardly ideal for automobiles—even compact ones. One long highway connects the Nepalese capital, Katmandu, with northern India.

Geography has forced the little kingdom to play the hermit's role for centuries. Sandwiched between India and Tibet, rectangular Nepal, a little smaller than Florilda, is only 500 miles long and 100 miles wide. Along its northern frontier with Tibet, the Himalayas rise pagodalike, culminating in the world's highest peak, 29,028-foot Mount Everest. To the south lie the lower but still formidable Mahabharat and Siwalik Ranges. Swooping down toward India, they end in the low-lying extension of India's Ganges plain, the Terai—a steaming jungle where tigers, rhinos, and deadly malaria run rampant.

Even Nepalese officials see little of their country outside the capital. In 1956,

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Now, for the first time, Nepal exports cheese, made from rich yak milk, to India. It is processed in the nation's first cheese factory. In the world the airplane has shrunk, the country no longer remains a recluse.

Ten years ago only a few hundred Europeans had ever set foot in Nepal. Only a handful of these had been allowed outside Katmandu. Today tourists are invited. So are foreign aid and technical advisers—to help develop Nepal's natural resources.

A Swiss geologist, Dr. Toni Hagen, on a United Nations technical-assistance mission, made the first geological survey of the country.

Writing in the March, 1960, *National Geographic*, he tells of the country's potential. In the rushing streams and rivers that sneer at men's attempts to cross them, Dr. Hagen found power: possibly abundant and cheap enough, when developed, to supply electricity to much of northern India.

Were some of this power harnessed to extract nitrogen from the air, nitrogen fertilizer could be provided for Nepal and much of Southeast Asia. It could be an important breakthrough in a country where more than 90 per cent of the people farm for a living.

Dr. Hagen also found spots where oil prospecting might prove worthwhile. He saw primitive iron and copper workings where small smithies and factories might profitably produce iron plowshares or bridge chains. He found pensioned Gurkhas setting up schools to bring literacy to the country.

He discovered much of Nepal's wealth in her people: in the friendly Sherpa guide whose courage has brought many a European safely down a Himalayan peak; in the pensioned soldier who is determined his son will have a better education; in the hard-working farmer who carves a grain field out of a mountain cliff.

Dr. Hagen also found the Nepalese at one with the world in liking fun. A Hindu religious festival in fall brings a carnival air to a village, below, where adults and children queue up for a turn on the hand-powered, homemade Ferris wheel. Adults enjoyed it so much that children had to wait long for their first ride.

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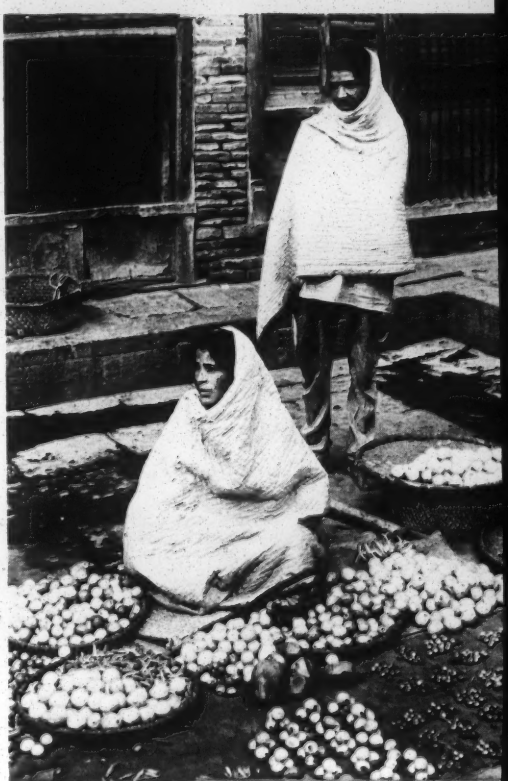
of the population hits the trail for one or two months of the year.

The blanket-wrapped couple at right has trudged from their warmer valley to vend their tangerines, guavas, bananas, cashews, papayas, peas, and limes in the Katmandu market. A girl may take a seven-day walk from Nepalese midlands to a bazaar on the Indian border to sell for 50 cents her *Cinnamomum* leaves—an ingredient of local curry powder.

Nepal produces little salt. It must be imported from India or Tibet. Rice, wheat, and vegetable oil ride yak trains like the one above, struggling belly-deep in snow up Himalayan passes to reach Tibetan salt depots high in the mountain gorges.

This camel of the highlands, the yak, is not only a first-rate freight train, but it also provides meat for food and hair for the typical homespun clothing of the Himalayas. Yak milk is drunk or churned into butter, important in Buddhist religious rites. It is always in demand, especially in Tibet.



WATER BOILS at Raccoon Ford, Virginia. Ralph Gray and Cay Hathaway shoot a riffle.

were a mild diversion to the others, but to me the trip seemed like shooting Niagara in a saucepan.

I gradually learned a little technique and Ralph, my steersman, relaxed more than ever. I learned that the bow paddler does four-fifths of the work. He feels the eyes of the stern man on his back all the time, but he cannot easily turn around to make sure the "captain" is doing anything but steering.

After being duped by an expert, I managed to get fooled by a duck. She fluttered across the river ahead of us, apparently unable to fly. "She's wounded!" I shouted. "No, that's an old trick," said Andy, "she's trying to lure us away from her ducklings."

Sure enough, near shore, we saw a dozen downy babies not long out of the nest, scrambling frantically to get away from the three water monsters paddling toward them. When we had passed and all was safe, the "wounded" mother sprang from the water and flew strongly back to her brood.

After several hours of paddling, fending off boulders, and admiring the scenery, a certain heavy feeling came over my arms. I was so tired I didn't even properly enjoy a small jewel of a goldfinch flickering across the river. Then I discovered how canoe travel is properly done.

We lashed the canoes together and ate lunch while drifting downstream. Drifting beats paddling any day—and sandwiches and cold milk taste better in midstream than anywhere else. They even made it possible for worn-out arms to lift a paddle again.

We camped that night on a pleasant, sandy island by Germanna Ford, 14 miles from our start. There, much of Grant's army had crossed on a pontoon bridge on the way to the Wilderness.

After a feast of steaks (paddling is hungry work) we lolled around the campfire. Ted Park read aloud the description of the Wilderness battle from Bruce Catton's *A Stillness at Appomattox*.

We learned that the Rapidan River had been the boundary between Grant's forces and Lee's during the winter of 1863-64. (Armies of that day did not fight in winter.) When weather permitted, Grant marched into the Wilderness, hoping to reach open country to the south before Lee realized he was moving.

But Lee smashed at the Federals before they got out of the woods. The Northern superiority in numbers and in big guns was nullified by the trees, which were so thick that cannon were almost useless, and great numbers of men could not be easily maneuvered.

As dusk filled the air around our camp it seemed we could hear across the rolling water many feet marching over

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ALMOST 100 YEARS AGO, the United States went through its most trying experience, the Civil War. As the centennial of that struggle approaches—it will be celebrated 1961-64—more and more Americans will become interested in the war that insured that we would remain one nation. Anticipating this interest, a group of National Geographic writers and editors last spring traveled to the Wilderness, site of one of the war's most hideous battles (now preserved by the National Park Service). To add adventure to the journey, they went by canoe—down Virginia's Rapidan and Rappahannock Rivers.

Canoeing Among Civil War Ghosts

Story and Photographs by Frank Sartwell, National Geographic Staff

THE DAWN MIST had barely lifted from the murmuring Rapidan River when it was replaced by wood smoke and the come-hither aroma of bacon and eggs. Andy Brown and Ralph Gray were starting breakfast—the only way to rouse such an intrepid explorer as myself from a warm sleeping bag.

It was Virginia spring. Trees were bright with the gold-green that would darken before summer. Bush honeysuckle pinked the clearings as it had done 96 years ago when the Army of the Potomac met the Army of Northern Virginia beside this river and made the green tangle a smoking hell. White dogwood blossoms seemed like the hovering souls of Johnny Reb and Billy Yank.

Four of us soon found out why Ralph and Andy were happy to cook—cooks don't wash dishes. We loaded our three aluminum canoes, and obliterated the traces of our camp as thoroughly as a century had obliterated the traces of the Civil War carnage.

It is my custom, when in a canoe, to sit in the center and watch the scenery. On this trip, I was shocked to learn that I was expected to sit in the bow and paddle. Even worse, it was my job to push us away from what seemed an endless series of particularly athletic boulders that leaped through the water. The rocks usually are located at riffles, where the river drops, every half mile or so. These tiny falls

did. Others reserved their last bullets for themselves.

Of the 118,000 Federals who marched across Germanna Ford and near-by Ely's Ford, 15,387 were killed or wounded. The Confederates lost 11,400 men out of 62,000.

The Wilderness battle, while no real victory for either side, marked the beginning of the end of the Civil War. Now the two armies began side-stepping toward the south, rasping each other like a pair of files. In the end, the Union file proved to have more teeth. The Southern cause died at Appomattox 11 months later.

Beside a road through the woods, we found a miles-long ditch, with a low rise of dirt before it—a Confederate trench 96 years old. Under Historian Dillahunty's direction, we scuffed among the leaves and grass, and found relics of the battle. A lead Minié ball, the bullet of that era, was one treasure (held by Mr. Dillahunty, above). Its perfect shape showed it had never been fired. We guessed it was dropped by a young Southerner whose fingers were stiff with fear.

We also found a piece of battered, rusted metal that Mr. Dillahunty identified as part of a Confederate ration box. Maybe it provided a final meal for a farmer-turned-soldier, who died wondering who would put in the spring crops back home in Georgia.

Returning to the river, we canoed past Ely's Ford and camped beside a purling riffle, under a clump of river birch. Here deer tracks dotted the sand, and a swarm of swallow-tailed butterflies, yellow and blue-black, brightened the spring air. Stacking rocks on our ration boxes to keep out hungry raccoons, we slept a haunted sleep.

On the last day, we encountered the "best" rapids of the trip (Ralph, Andy, Ted, Paul Jensen, and Cay Hathaway all said so). Where the Rapidan meets the Rappahannock (below), it tumbles in a foaming rush, scouring whitely through boulders as big as the blisters on my hands. We carefully sought out channels, and twisted through rocks and fallen trees. It was wild country, with no sign of human habitation. On the whole 37-mile trip, from near Culpeper, Virginia, to Fredericksburg, we had seen only four or five houses from the river.

Overhead soared a majestic bald eagle, white tail and head glistening in the sunlight. In calmer water below the rapids, we saw a blunt muskrat head carving a V in the surface, while along the banks neatly felled trees showed that beaver had been at work. Sitting in the bow of the lead canoe, I could easily imagine we were alone on the continent.

All too soon we reached the end of our trip and returned to the workaday world, where few ghosts haunt and no eagle soars.

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SKETCHED ON THE SCENE BY ALFRED R. WAUD, MAY 6, 1864; COURTESY LIBRARY OF CONGRESS

FLAMES SEAR the battle-broken trees of the Wilderness as soldiers carry off a wounded comrade in an improvised stretcher. Below, Park historian displays relics of the battle.

the old bridge, the ghostly neigh of horse and clank of saber, and, far off, the crackle of rifle fire and the whine of Minié balls cutting the air. The sounds faded, the fire died, and we slept.

Breakfast the next morning was sausage, buckwheat cakes, butter, syrup, and sand. By arrangement, we met National Park Historian Albert Dillahunty for a tour of the battlefield. In the bright sun it was hard to conjure up the ghosts of the night before, although we were on the road they had traveled.

In 1864 the Wilderness was a near-jungle of second growth, scrubby trees twined with honeysuckle, in which a man could see hardly twenty yards. We tried it in 1959—it is still true. A handful of Indians might have fought here, or a couple of buck deer, but for regiments and corps used to open ground, a formal battle was impossible.

Scholars have mapped out a plan of the two-day fight, and as we studied it on the spot it seemed clear enough. But for the men in the struggle, and the generals commanding them, there was little order to the battle. To the dense

thickets shooting added a haze of gunsmoke as rifles spat death at random from blind men toward others equally blind.

Then came the final horror—fire. The woods caught, and wind fanned tongues of flame through the dead leaves and pine needles. Wounded men writhed on the ground, begging their comrades to kill them before the flames

it is the newest of newborn babes, geologically speaking, compared with the Farallons."

Our ears quickened, for we knew by the sound of his voice that Sock had a good story for us. The University at our feet had started him in geology, and a lifetime as an oil company prospector had given him a reputation and a nickname.

"Yes, it was only yesterday, as we rock readers reckon time, that the ocean poured in here and filled up a perfectly fine California valley. But before that could happen, a good many days' work was needed to prepare the way. In fact, if you count each change, or geologic era, as a day, it took six days for the creation of San Francisco Bay—the same as for the original Creation.

"We can see the whole thing right here from the grandstand of these hills. We're standing about 1,500 feet above sea level now, but back there on the first day of creation we are treading water. No land is visible from the Sierras to the Farallons; all is a vast inland sea. 'California' is out there in the Pacific, surrounding the Farallons which are just a small part of a mountainous land mass.

"This is the day of the dinosaur, the Cretaceous period 100,000,000 years ago. Rain drums on the land, tropical vegetation bends under the downpour, powerful rivers pour silt *eastward* until it lies in layers miles thick beneath the ocean. Under this terrific weight, and pressured from below by the writhing heat of inner earth, the ocean floor crumples. Lava pours through the cracks, and earth's buckling crust thrusts upwards. The Coast Ranges rise from the sea, and as the day ends—yes, there it is—the Berkeley Hills nudge our treading feet and we stand up.

"Now it is the second day. The land rises and falls again and again. But toward dusk, about a million years ago, the Coast Ranges arise for the final time. The coast line forms, and the interior sea dries up to form the Central Valley. California is born, but San Francisco Bay is dry land.

"On the third day we turn around on our soggy hilltop and look east to the Sierras. Winds from the Pacific blow wet clouds against the frigid granite walls of the mountains. The clouds rise to surmount the ranges and give up their moisture in rain or snow. Great rivers, in thaw periods, pour through Central Valley

DAVID S. BOYER, NATIONAL GEOGRAPHIC STAFF

SAN FRANCISCO, seen from the air, above, crowds the Bay. Golden Gate's narrow waters separate the thumblike peninsula (see map) from Marin County's bare hills. Beyond: the Pacific.

FISHERMAN'S WHARF dispenses crabs and other delicacies to the Bay area's homefolk and visitors.

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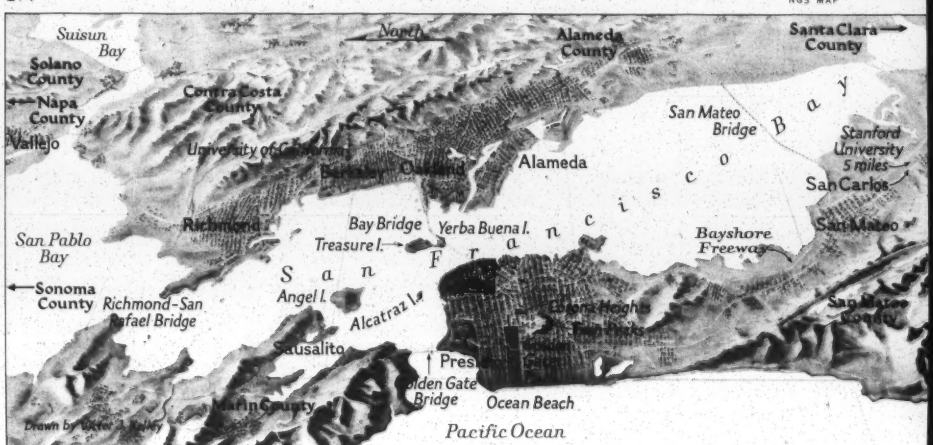
CLYDE SUNDERLAND

SAN FRANCISCO BAY *The Amazing Story of Its Birth*

"YOU FELLOWS ARE IN LUCK. The view was never better. I've never seen the Farallons from here before," Sock said, pointing almost due west.

We were looking down on San Francisco Bay from the crest of the Berkeley Hills. Through the clean, rain-washed air our eyes sped across the blue, white-capped water, past San Francisco's shining towers, and over toy-size Golden Gate Bridge. In the dark Pacific, at the very edge of seeing, the Farallon Islands broke the horizon in two tiny points—like the glimmering sights on a long rifle barrel.

"You'd think," Sock continued, "that this Bay had been here forever. There it lies, big as life, one of the world's largest landlocked harbors, stretching 45 miles north and south and up to 12 miles wide, covering 300 square miles. Yet



DAVID S. BOYER, NATIONAL GEOGRAPHIC STAFF

GOLDEN GATE Bridge spans the ancient river canyon that became an ocean strait.

and the Coast Ranges to return the water to the ocean.

"But the Coast Ranges are still rising in this cold Pleistocene era, making, in effect, a higher and ever higher dam against the westward flowing rivers. Soon every river but one is blocked and they all join and flow together toward the final exit.

"The fourth day passes with the combined drainage of a 400-mile-long valley roaring through the single outlet—the Golden Gate. You fellows can hear it grinding if you listen hard enough, hear it carving its canyon deeper as the Coast Ranges continue to rise. In like fashion the same river is cutting another gorge — Carquinez Strait—through these Berkeley Hills we're standing on. In between, the Bay is still dry, except for the river channel. This brings us to 225,000 years ago.

"And now we're beginning the fifth day with a rosy-fingered dawn like Homer will one day sing about, only we are the only humans here to appreciate it. Somehow the old-new earth shakes off her mantle of ice and the weather grows warmer. Glaciers, thousands of feet thick, melt from the Sierras. The river increases in volume and boils through the Golden Gate, cutting it still deeper.

"But a strange thing happens. Ice is melting all over the world and the oceans are rising. Instead of fresh water pouring out of Golden Gate, salt water now flows in. The Pacific makes islands of Alcatraz and Yerba Buena, spreads slowly over all the basin below us, and leaves that thumb-like peninsula across the way. The Bay is born, 100,000 years ago.

"But only to die. On the sixth day, another Ice Age comes. Glaciers form and hold the waters, the seas recede, and the Bay drains into the Pacific. But then the big thaw comes to stay, the ocean rises again, flows through the Golden Gate, and fills San Francisco Bay with water a bare 10,000 years ago."

We stirred a little, now that the story was complete, and wondered: will there be a day of rest, or is something expected of us? Sock looked at us in turn, a long instant each, and said:

"And now, let's walk down and take possession. That looks like a good place to found a city, there on the inside edge of that thumb . . . Come on! Tomorrow may be too late." R.G.

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